Chart Projector

CP-30

Operations Manual

SHIN-NIPPON

I-040617

TABLE OF CONTENTS

1. SAFETY CONSIDERATIONS 3
2. SAFEGUARD SUMMERY 6
3. NAME OF EACH COMPONENT 7
4. SPECIFICATIONS 7
5. SETTING 8
6. OPERATING PROCEDURE 9
7. MAINTENANCE 10
8. PRECAUTIONS BEFORE USE 12
9. COMPOSITION 12
10. SPECIAL TEST CHARTS 13
11. CLASSIFICATION 15
12. TRANSPORTATION AND STORAGE 15

1. SAFETY CONSIDERATIONS

For safer and more effective use of the apparatus, the reader is asked to observe the following points:

★General definitions of safety symbols are indicated below.

⚠ Caution	
⚠ Warning	
❗	General mandatory action.
⊘	No specific definition given. Denotes general ban or prohibition.

⚠ Warning

⊘ At no time attempt to remodel or desassemble this machine.
(Damage to the machine or personal injury will result.)

⊘ This machine is a precision optical unit, operations must be carried out at all times by experienced, authorized personnel.
(Damage to the machine or personal injury will result.)

The power cord must be firmly connected to an electrical ground (safety ground) at the power outlet.
(Personal injury may result from electric shock etc.)

Do not touch the optical parts.
(Measurement accuracy will be affected.)

Always take great care when operating the unit.
(Malfunction or damage to the equipment could occur.)

If the machine fails to work properly, the client should not try to repair the fault themselves, but consult their dealer immedi-ately. (Damage to the equipment or personal injury will result. Consult your dealer, if repair work needs to be carried out.)

If a malfunction occurs during operation, immediately cut the power. (Damage to the equipment or personal injury will result. Consult your dealer, if repair work needs to be carried out.)

Never remove the plug from the outlet if your hands are wet. (Electric shock or personal injury could result.)

Make sure the power cord is not damaged.
(Fire or electric shock may occur.)

If the machine is not to be used for some time, remove the plug.
(Electric shock, leakage or fire may occur.)

Remark for setup
At the bottom of the product, there is a uneven part with cause the instability at the usage.
So please use it which the special stage.

Caution

Avoid storage or use of the machine under the following conditions:

1) In an environment where the temperature falls below -10℃ or exceeds +40℃.
2) Where noxious gases or air pollutants are present.
3) In steamy or moist environments, especially where condensation forms.
4) Where dust and grit may occur.
5) Where oil fumes or greasy substances are emitted.
6) Where there are atmospheric concentrations of salt.
7) Near gas generation areas and places where dust accumulates.
8) Keep in a secure, stable situation. Do not expose to strong vibrations (areas of seismic activity) and sudden shocks (this includes transportation) etc.
9) Where there is an inclination of more than 10 degrees.
10) Where the voltage from the power source rises or falls sharply during loading.
11) Where fluctuations in the voltage of the power source occurs.
12) In direct contact with sunlight.

Make sure the indicator of the voltage selector on the transformer is same voltage from the power source.

Do not use the different fuse and make sure the power is off position and remove the plug from the outlet before changing new fuse.

When not in use, the machine should be protected with the provided dust cover.

2. SAFEGUARD SUMMARY

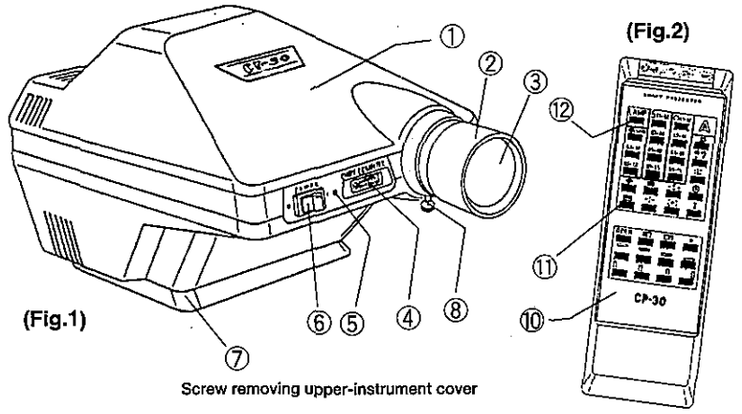
Caution

For safer and more effective use of the apparatus, the reader is asked to observe the following points:

1) The power cord must be firmly connected to an electrical ground (safety ground) at the power outlet.
2) If the machine is not to be used for some time, remove the plug.
3) If a malfunction occurs during operation, immediately cut the power.
4) Never remove the plug from the outlet if your hands are wet.
5) Similarly, if the machine fails to work properly, the client should not try to repair the fault themselves, but consult their dealer immediately.
6) This machine is a precision opticl instrument. Handle with care at all times, making sure not to accidentally drop it.
7) When cleaning the chin rest and head rest, use small amount of methyl alcohol on the cotton swab or soft cloth.

1) Make sure the cords are not damaged.
2) This machine is a precision optical unit, operations must be carried out at all times by experienced, authorized personnel.
3) Do not touch the optical parts.
4) At no time attempt to remodel or disassemble this machine.
5) Do not touch area around lamp house while light is on or immediately after putting it off. It is extra hot.
6) Do not remove the support racks and pinion covers on the table top while in operation. Even when they are mounted, be careful not to have your fingers caught in.
7) TV pictures may be disturbed by noise caused by this apparatus. Keep the two apart in such a case, or do not use them at the same time.

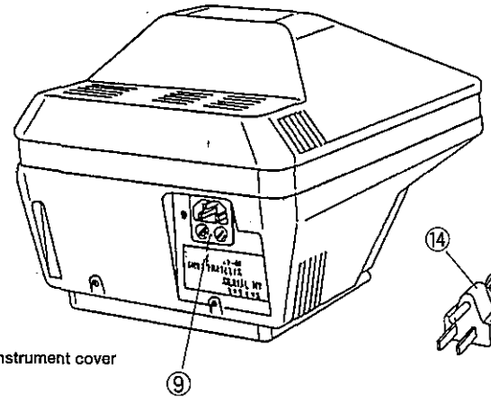
3. NAME OF EACH COMPONENT



(Fig.1)

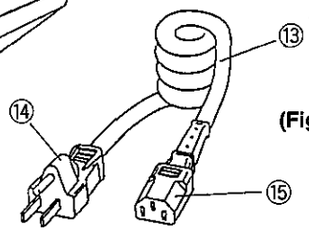
(Fig.2)

Screw removing upper-instrument cover



(Fig.3)

Screw removing upper-instrument cover



(Fig.4)

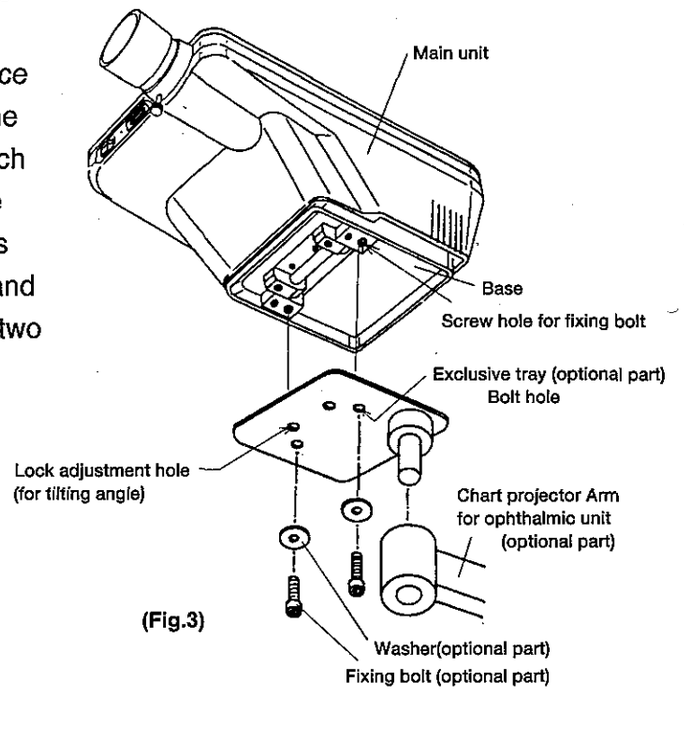
1. Main unit
2. Focus adjustment ring
3. Projection lens
4. Receiver
5. Pilot lamp
6. Power switch
7. Base
8. lamp replacement lid
9. AC power cord plug
10. Control box
11. Chart/mask selection switches
12. Lamp switch
13. AC Power cord
14. Input plug (AC power supply)
15. Input plug (Main unit)

4. SPECIFICATIONS

(1) Specifications of main unit
   a) Projection distance : 2.0 to 7.0m
   b) Projection enlargement rate : 21.5X(at 5m distance projection)
   c) Projection field : 267×267mm (at 5m distance projection)
   d) Tilting angle : 5° each upwards and downwards from horizontal level
   e) Light source : 12V, 30W(halogen lamp)
   f) Dimentions : 210(W)×380(D)×190(H)
   g) Weight : 4.7kg
   h) Automatically power off after 10minuts.

5. INSTALLATION

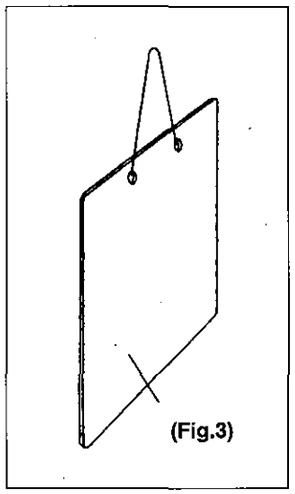
(1) Setting of the main unit To use the SHIN-NIPPON *Ophthalmic Unit, first, place* the CP-30 main unit on the exclusive tray. Then, mach two bolt holes of the table bottom to two screw holes on the projector bottom, and secure them by inserting two bolts.



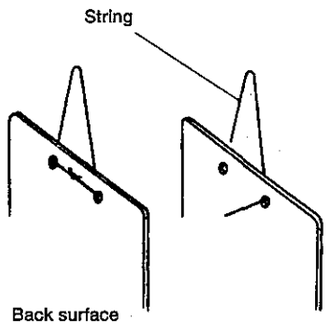
(Fig.3)

(2) Setting of the screen Projection screen (gray crape surface) insert the provided string into two holes at the upper part of the screen and tie its ends. See Figure 9.

Attach a hook to the wall at the height of the patient's eyes and the screen will be hang horizontally.



(Fig.3)



(Fig.3)

6. OPERATING PROCEDURES

(1) Power supply

Connect the power cord to the main unit and the AC wall outlet. Then, turn ON the power switch on the front surface of the main unit. The chart used previously will be released and the one at the start position will be automatically on standby. See Figure 2.

(2) Projection focusing

Set the projection lens (3) to the position where the lens top and an examine will be positioned at the same distance from the screen. Press the 0.1 and 0.15 switches for the Landolt's chart (or Snellen's chart) on the control box to feed and project the chart. Position the projection lens so that the projection image will be at the center of the screen. Turn the focus adjustment ring (2) to move the lens come forward and backward. Adjust focus using the provided test scale (for 2 to 7m distance) so that the light will be focused on the 0.1 Landolt's (or Snellen's) chart. When the operation of the focus adjustment ring does, not permit an optimal focus, move the main unit forward or backward. See figure 2.

(3)Operation of the control box

Press any pushbutton (visual acuity and special test charts, masks, or R & G and polarixation filter), and any chart is fed or changed selectively. The R & G and polarization filters, or various masks can be applied to the projected chart. See Figure 8.

(a) Turn on the power switch to light the haloge lamp. At the same time, the 0.05 images of the Landolt's chart or Snellen's chart is projected. Even if an examination is completed at any position of the chart and the lamp goes out, the mask is released with the power switch ON to leave the screen OPEN. The chart is reset to the original point and the 0.05 images of the Landolt's (or Snellen's) chart is projected.

(b) The R&G or polarization filter is superimposed on any selected chart when the corresponding switch is pressed. Press the OPEN switch to release the filter only. The chart image remains with the projection intact.

(c) Perform masking while visually monitoring projected image.

1) Normally, mask the 0.3 to 1.5 images of the Landlt's, Snellen's, Alphabetic, Alphanumeric, Numeric, or infant picture chart.

2) Oparation of the mask Press the switch of mask and vertical/holizontal mask line is selected.

7. MAINTENANCE

Replacing consumables

(1) Replacing an electric lamp (halogen lamp)
First, unplug the power cable from the outlet. Then, turn the instrument and remove 4 screws on bottom of upper part of the instrument and remove the upper instrument-cover. Refer Fig.1. Pull the halogen lamp upward, and it will be easily detached from the receptacle in the lamp housing. Insert the lead of a new halogen lamp into the hole of the receptacle. Refer Figure 10.

⚠Cautions

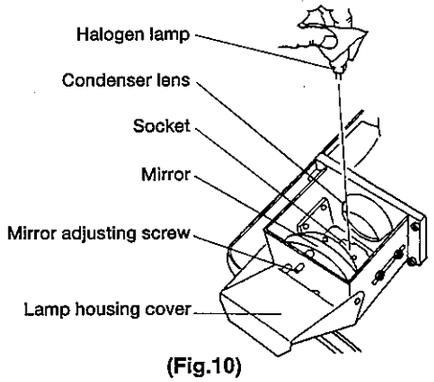
(a) Do not touch the halogen lamp with bare hands. Otherwise, fingerprint will adhere to the lamp surface to adversely affect the projected light or chart image. Be sure to wrap the lamp with paper or cloth and then attach or detach the lamp. When the lamp gets dirty, wipe it using cloth moistened with alcohol.

(b) Do not replace the lamp when it lights or immediately after it goes out, because the lamp or the lamp housing lid is very hot. See Figure 10.

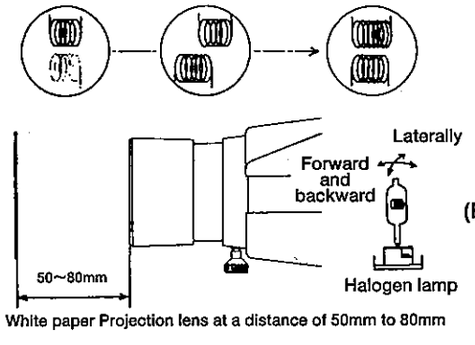
(c) Replace a halogen lamp with a spare or the same kind of (genuine) part. The 12V and 30W halogen lamps very in size, filament shape, or diameter of bulb lead depending on the manufacturer. If an unspecified lamp is used, it may not attached firmly or cannot yield satisfactory illumination level or color tone. Therefore, be sure to use a spare or a genuine part.

(d) Make sure that the filament of a halogen lamp is properly positioned. The filament improperly positioned may cause deviation in illumination level in the viewing field even if the lamp is not dirty.

(e) To adjust the position of the filament, turn on the power switch to light the halogen lamp. Place white paper vertically at a distance of 50 to 80mm from the projection lens (3) mounted at the front side of the main unit. Then, two images of the filament in the halogen lamp will appear in a vertical row in the circular illumination field. Therefore, position the filament so that the two images will be identical in size, providing uniform brightness if any of the images is dim, parted widely, or deviated sideways, brightness will vary and illumination level will be insufficient. Adjust the position if the filament. Push the top of the halogen lamp with the handle of a metal screwdriver (set screwdriver) forward and back ward, or laterally so that two filament images will be focused uniformly. Be careful not to bend the lamp, or it will be damaged. See Figure 11.



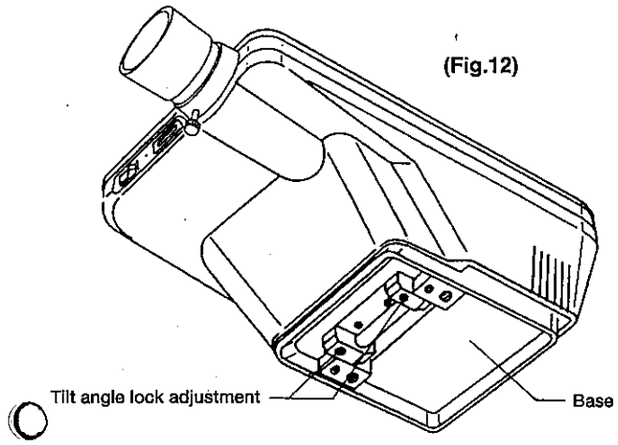
(Fig.10)



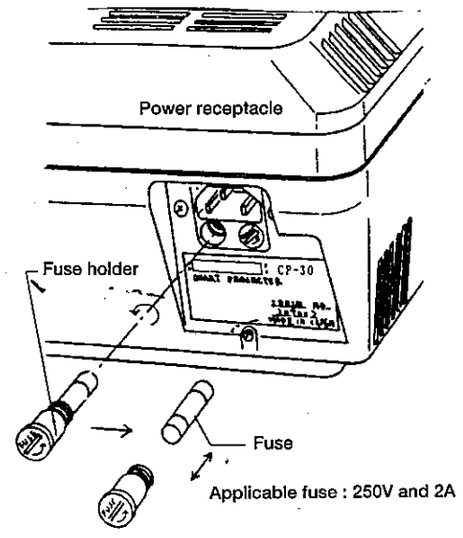
(Fig.11)

(2)Replacing a fuse
First, pull out the input plug form the power receptacle and turn the fuse holder counterclockwise using a standard screwdriver. Then fuses will be detached together with the holder. Pull them out. Next, remove the fuse from the from the fuse holder. Insert a new fuse (125V, 2A) into the fuse holder and screw it in. See Figure 12. Note that two fuses are inserted in array. A defective fuse cannot be identified visually. Therefore detach and check both.

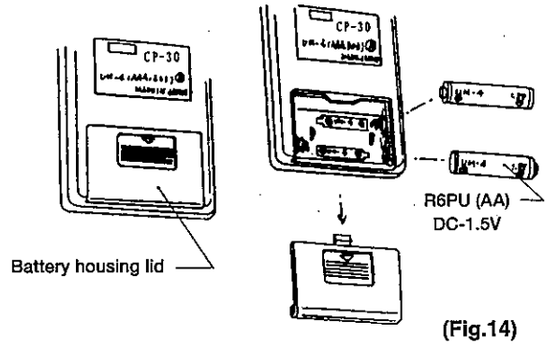
(3)Replacing batteries in the control box.
After the POWER switch is pressed, if the chart or mask is not changed be pressing the switch on the control box, batteries are considered to be consumed. Replace the batteries. Push lightly the arrow mark of the battery lid on the bottom surface of the control box and pull it out. Then pick out the old batteries and replace them with new ones. Place new batteries as illustrated on the bottom of the battery housing. Install two batteries to prevent fluid leakage due to corrosion. R6PU (AA) 1.5VDCX2 See Figure 13.



(Fig.12)



(Fig.13)



(Fig.14)

8. PRECAUTIONS BEFORE USE

(1) Install the projector in a location which is free from dust and humidity.
(2) Keep the lens free from dust or fingerprints. Wipe off dust using a calligraphic brush or air brush, Wipe off fingerprints or oil using lens cleaning paper or clean gauze moistened with a mixture of alcohol and ether.
(3) The CP-30 is a precision optical instrument. Handle it carefully during transportation.
(4) When the tilting unit tends to keep facing downward or upward, tighten the two tilt angle lock adjustment screws on the back side of base. Figure 14.

9. COMPOSITION

Standard composition

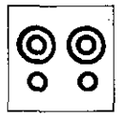
Projector main unit ·····1
Control box·····1
Screen·····1
Power cable ·····1
Test scale sheet ·····1
Chart card (for training) ·····1
Vinyl cover ·····1
Spare lamp (12V and 30W halogen lamp) ·····1
Spare fuse (250V,2A)·····1

Optional component

Polarization filter with a bar
R & G glasses with a bar

10. SPECIAL TEST CHARTS

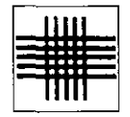
Astigmatism chart
Employed to identify astigmatism and find the astigmatic axis. The astigmatic axis index (red) shifts when the chart is turned.



Red green test
Monocular examination
●Evaluation of latent hyperopia, anddetermination of excessive or insufficient correction of myopia, or identification of insufficient correction of anisometropis.
●The emmetropia or excessively corrected eyes can see both red and green test targets clearly.
●The hyperopia or excessively-corrected myopia can see the target against the green background more clearly.
●The myopia or excessively-corrected myopia can see the target against the green background more clearly.

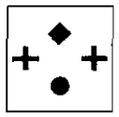
Point group chart
Determines the degree of precision of a satigmatism lens when used in conjunction with the vision tester cross cylinder.

Duochrome balance
Binocular examination Paralyzation method
●Fine adjustment of binocular spherical lens and establishment of corrected binocular balance for normal binocular vision.
●*Each eye observes both lengthwise and* sideways figures due to poralization.
Right eye : Green (9) and red (6)
Left eye : Green (3) and red (5)
In the same manner as the normal red and green test, the variation in brightness of two numerals demonstrates whether or not correction has been undertaken satisfactorily.
●This test has proved to be effective for examination of ametropia among young people. It is also effective for evaluation of dominant eye, altemate fixation, or abnormal suppressed eye muscle balance (perpendicular or horizontal heteroporia).



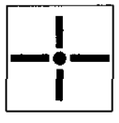
Cross-line grid
(or corss -hair lies)
This grid is employed to evaluate prebyopia when used in conjunction with ±0.50 Cross Cylinder. In general, this grid is printed on the near-point card of a vision tester. The forsighted spectacle level is examined and and then used to correct the vision. Then, an optimal spectacle level at a near point is examined.
Note: Ask the examinee which looks darker, the vertical or lateral line.
●In case of prebyopia, the lateral line looks darker and the vertical line dim. (When both the vertical and lateral lines look identical in darkness, farsighted glasses are not necessary.)
●Advance the spherical lens in the + direction by 0.25 D until both the vertical and lateral lines look identical for darkness.
●When the vertical lines are seen darker and the lateral lines dim, the vision is corrected excesssively. Therefore, decrease the correction *Binocular refractive level until both the vertical and* lateral lines have the same degree of darkness.

Binocular refractive balance test
Binocular examination, Paralyzation method
●Examination of balance of refractivity and visual acuity.
●Polarized light demonstrates either of the upper and lower target (05, 0.6, 0.8, 1.0, or 1.2 acuity value) for each eye alternatively. However, normal binocular vision identifies the target as the original test target. This comparison demonstrates whether or not acuity balance is normal.
●When the target is observed a being overlappped or deviated, latent hetero phoria is identitified.



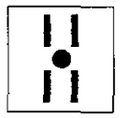
Worth test
Binocular examination, R & G complementary coloring
●Rough examination of binocular vision.
●The R & G filter is used to examine the visualization of a dot. For example, assuming that a red filter is applied to the right eye, and a green filter, to the left eye : When two red points appear, the image on the left eye is suppressed. When three green points appear, the image onthe right eyes is suppressed. When four green points appear, binocular vision is normal and a remakable abnormality derived
form an imbalanced eye muscle is not identified. When five green points appear, both eyes function. However, the fusion of the lower dot with different color is weak, suggesting plopia. Therefore, another examination for convergence required.

Schober test
(Cross ring test)
Binocular examination, R & G complementary color method, in a completely dark room
●Latent heterophoria examination method invented by Dr.Schober.
●Have the examine view the target with bare eyes. Then apply a green filter to one eye and a red filter to the other eye. A red cross is seen through the red filter and a green ring is seen through the green filter.
●When the cross is seen to be deviated from the ring, latent heterophoria is identified.
●The ring diameter is 2P dpt and one section of the red cross is 1P dpt.



Phoria test
Binocular examination, Poralization method
●When the poralization filter is employed, the right eye observes only the right lower part of the cahrt, and the left eye, the left upper only.
●An abnormality of each eye is assessed in terms, of variation and dislocation of horizontal and perpendicular lines, and in combination of lines as a cross.
●The lateral variation of a cross demonstrates exophoria.

Coincidence test
Binocular examination, Polarization method
●Identification of retinal aniseikonia and vertical or horizontal heterophoria.
●The center dot is used to combine 〔and〕 figures across the dot.
●The right and left images in different sizes demonstrate aniseikonia on the perpendicular or horizontal meridian. The patient with aniseikonia is susceptible to headaches and cannot work when at a short distance viewing is required. He/she cannot enjoy.



Haploscopic vision test
Binocular examination, Polarization method
●Stereo examination for assessmment of far special vision.
●With polarized light, upper lines are seen backward with respect to the fixation point, and lower lines, forward. For normal stereoscopic vision, the lines are seen at a position 1/3 nearer than that seen by abnormal eyes.
●For very light esophopria, two separately polarized lines are seen fused inside the fixation point. The backward part of the lines is also fused into a single line.
●When two lines are overlapped or seen separately, a defect in fusion is identified. In case of esophoria, the prism correction allows the patient to perceive the backward figurs as clearly as the forward part. For a patient with exophoria with sufficient fusion, a figure is easily fused. However, it takes some time to focus on the output forward image. When the lines do not appear on the perpendicular line passing the fixation point but appear across the line, monocular dominance or suppression is suggested.

11. CLASSIFICATION

Chart projector CP-30 complies with Medical Device Directive 93/42/EEC.
1) Classification by the type of protection against electric shock.
Class I instruments
2) Classification by the extent of protection against electric shock
Class B instruments
3)Classification by the extent of protection against harmful infiltration of water
Ordinary instruments (instruments with outer coverage not protected against water infiltration.)
4) Classification by in-service mode
Short-time operation

12. TRANSPORTAION AND STORAGE

When transporting the machine, make sure the following environment:

TEMPERATURE	0～40℃
HUMIDITY	20～80%

(Transportation and storage in the only package)

EU Representative

FAUSTO GUZZETTI (SHIN-NIPPON TECHNICAL CENTER)
VIA SOLFERINO,5 21057 OLGIATE OLONA(VA), Italy

Supplied by

AJINOMOTO TRADING, INC.
SHIN-NIPPON Medical & Ophthalmic Instruments Dept.
EAST WING 7TH FLOOR, TFT BUILDING 3-1-22 ARIAKE, KOTO-KU, TOKYO 135-8071, JAPAN
TEL: 813-3528-4416 FAX: 813-3528-4426
http//www.shin-nippon.jp

Manufactured by

TOWA MEDICAL INSTRUMENTS Co.,Ltd.
1698-2 Oaza Nakano Nakano-shi, Nagano-ken,383-0000 Japan

· Please do not dispose this product as unsorted municipal waste.
· Please inquire the distributor about the return and the collection system.